

Translation

PATENT COOPERATION TREATY

PCT/JP2003/014864



PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JST-104-PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/014864	International filing date (day/month/year) 21 November 2003 (21.11.2003)	Priority date (day/month/year) 10 October 2003 (10.10.2003)
International Patent Classification (IPC) or national classification and IPC H01J 49/10, G01N 27/62, 27/68		
Applicant JAPAN SCIENCE AND TECHNOLOGY AGENCY		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
- This report contains indications relating to the following items:
 - ☒ Box No. I Basis of the report
 - ☐ Box No. II Priority
 - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - ☐ Box No. IV Lack of unity of invention
 - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - ☒ Box No. VI Certain documents cited
 - ☐ Box No. VII Certain defects in the international application
 - ☒ Box No. VIII Certain observations on the international application

Date of submission of the demand 10 September 2004 (10.09.2004)	Date of completion of this report 07 January 2005 (07.01.2005)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language _____, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished
- ☒ the description:
- pages _____ 1-16 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ 2-7, 9-11, 13-18, 20 _____, as originally filed/furnished
- pages* _____, as amended (together with any statement) under Article 19
- pages* _____ 1, 8, 12, 19 _____ received by this Authority on _____ 10 September 2004 (10.09.2004)
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages _____ 1/10-10/10 _____, as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2, 15-19	YES
	Claims	1, 3-14, 20	NO
Inventive step (IS)	Claims		YES
	Claims	1-20	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims		NO

2. Citations and explanations

Document 1: Shigeru Suzuki, two others, "Haikibutsu wo kigen to suru kagaku busshitsu no LC/MS bunsekihou no kentou: (1) Haikibutsu kanren kagaku busshitsu bunseki no tame no LC/MS no shin-ion-kahou," *Dai-12-kai kankyou kagaku touronkai yokoushuu*, Japan Society for Environmental Chemistry, 25 June 2003, pages 764-765

Document 2: JP 11-94802 A (Daido Steel Co., Ltd.), 9 April 1999

Document 3: JP 2002-15698 A (JEOL Ltd.), 18 January 2002

Document 4: JP 2001-93461 A (Hitachi, Ltd.), 6 April 2001

Document 5: JP 2-135655 A (Hitachi, Ltd.), 24 May 1990

Claims 1, 3 to 14, and 20

Claims 1, 3 to 14, and 20 lack novelty and do not involve an inventive step in the light of document 1.

Document 1 discloses a process for directly ionizing a chemical substance, characterized in that an LC eluate containing a substance to be measured is sprayed using argon gas, glow discharge is initiated, and argon cations and excited argon are generated. Further, document 1 (fig. 1) also discloses the use of nitrogen as a dry gas and a

configuration wherein a ground electrode is disposed on an APCI probe side.

The amendments made according to the amendment papers filed on 10 September 2004 add a feature wherein "a potential of between several tens of volts and several tens of kilovolts is applied," but the optimization of applied voltage when initiating a glow discharge is merely a conventional design feature fittingly determined by a person skilled in the art, and taking into account the disclosures in document 2 (paragraph [0019]), which is newly cited in this international preliminary examination report as an example of the general state of the art, the above range of values is not recognized as being a special range that differs in any way from conventional practice.

Claim 2

Claim 2 does not involve an inventive step in the light of documents 1 and 3.

Document 3 discloses the heating of a sprayed gas in the ion source of a mass spectrometer, and applying this feature to the invention disclosed in document 1 would be obvious to a person skilled in the art.

Claims 15 and 16

Claims 15 and 16 do not involve an inventive step in the light of documents 1 and 4.

Document 4 (paragraph [0030]) discloses a feature wherein an electrode used in a mass spectrometer is coated with gold, and applying this feature to the invention disclosed in document 1 would be obvious to a person skilled in the art.

Claims 17 to 19

Claims 17 to 19 do not involve an inventive step in the light of documents 1 and 5.

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In the light of the disclosures in document 5, a person skilled in the art could easily conceive of constituting a discharge electrode in the invention disclosed in document 1 using a plurality of needle-shaped electrodes.

Further, the addition of a three-dimensional actuator for use in adjusting the position of an electrode is merely the obvious application of a known technique.

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Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2004-28763 A	29 January 2004 (29.01.2004)	25 June 2002 (25.06.2002)	
[E, X]			

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure	Date of non-written disclosure (day/month/year)	Date of written disclosure referring to non-written disclosure (day/month/year)

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VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The numerical range of the phrase "between several tens of volts and several tens of kilovolts" in claims 1 and 8 is unclear.

The scope signified by the phrase "chemical substances that are difficult to ionize" in claim 12 is unknown, and thus, the range of substances included therein is unclear.